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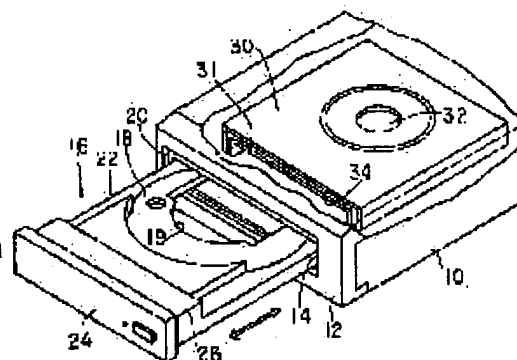
(54) OPTICAL DISK DRIVE ASSEMBLY

(57)Abstract:

PROBLEM TO BE SOLVED: To provide an optical disk drive assembly capable of preventing the blowout of wind to the outside and preventing the generation of whistling sounds.

SOLUTION: The front wall of a casing 10 is provided with a slot 14 and a disk tray 16 is disposed freely movably through the slot between a draw-out position where an optical disk is attachable and detachable and a pushing position where the optical disk exists in a prescribed loading position within the casing. A first seal 20 is disposed along the peripheral edge of the slot and when the disk tray moves to the pushing position, a front panel 24 of the disk tray abuts on the first seal and hermetically shields the circumferential edge of the slot.

A front end surface 31 of a clamp holder 30 disposed within the casing is provided with a second seal and this second seal abuts on an abutment surface 26a of the disk tray and shields the spacing between the disk tray and the clamp holder when the disk tray moves to the pushing position.



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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the optical disk driving gear equipped with the tray which lays the optical disk as an information storage medium.

[0002]

[Description of the Prior Art] Generally, an optical disk driving gear is equipped with the rectangle box-like case with which insertion opening was prepared in the front face, and the tray on which an optical disk is laid, and this tray is prepared possible [drawing in and a cash drawer] through insertion opening to the interior of a case. The clamp holder which clamps the turntable which supports an optical disk, the optical head which performs read-out of information and writing to an optical disk, the motor which drives a turntable, and the optical disk laid on the turntable is prepared in the interior of a case.

[0003] When operating an optical disk driving gear, after laying an optical disk in the tray in the condition of having been pulled out, a tray is pushed in into a case with an optical disk. And if an optical disk arrives at a predetermined location, while a turntable will go up and supporting an optical disk, an optical disk is pushed against a clamp holder and held in a predetermined location. In this condition, while carrying out the rotation drive of the turntable, an optical head performs informational read-out or informational writing. Insertion opening of a case is blockaded by the front panel of a tray in the condition that the tray was drawn in the case.

[0004] According to the optical disk driving gear of such a configuration, the wind generated when a clearance existed between a tray and a clamp holder and an optical disk rotated at high speed is blown into the front-face, i.e., insertion opening, side of a case through this clearance.

[0005] When a tray is drawn in an actuated position, it constitutes so that the periphery section of case insertion opening and the periphery section of the front panel of a tray may lap, and in order to prevent that such a wind blows and comes out to the case exterior, it is constituted so that the clearance between these periphery sections may be filled up with sealants, such as a gasket.

[0006]

[Problem(s) to be Solved by the Invention] The clearance between above periphery sections of insertion opening and front-panel periphery sections of a tray is the greatest diffuser with which the wind generated by rotation of an optical disk blows off, and can prevent the blowdown of the wind to the exterior effectively by filling up this clearance with a gasket etc. However, there is the fitting section of components etc. besides insertion opening, a wind blows off from these parts in the front section of a case to the exterior, and there is a problem of emitting a whizzing sound in it.

[0007] This invention was made in view of the above point, and that purpose prevents the blowdown of the wind to the exterior, and is to offer the optical disk driving gear which can prevent generating of a whizzing sound.

[0008]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, the optical disk driving gear concerning this invention While having a case with the front wall with which insertion opening was prepared, and the installation section in which an optical disk is laid The pushing location

located in the cash-drawer location in which desorption is possible, and a loading location predetermined [in the above-mentioned case] in the above-mentioned optical disk in the above-mentioned optical disk, The disk tray in which between ** was established free [migration] through the above-mentioned insertion opening, The optical disk moved to the above-mentioned loading location, and the clamp holder holding the clasper which can be engaged, The 1st seal which is located the front panel of the above-mentioned disk tray, the above-mentioned case front wall, and in between, and covers the clearance between the above-mentioned front panel and the above-mentioned case front wall when the above-mentioned disk tray moves to the above-mentioned pushing location, When the above-mentioned disk tray moves to the above-mentioned pushing location, it is characterized by having the 2nd seal which is located the above-mentioned disk tray, a clamp holder, and in between, and covers the clearance between a disk tray and a clamp holder.

[0009] Moreover, the optical disk driving gear concerning this invention While having a case with the front wall with which insertion opening was prepared, and the installation section in which an optical disk is laid The pushing location located in the cash-drawer location in which desorption is possible, and a loading location predetermined [in the above-mentioned case] in the above-mentioned optical disk in the above-mentioned optical disk, The disk tray in which between ** was established free [migration] through the above-mentioned insertion opening, The optical disk moved to the above-mentioned loading location, and the clamp holder holding the clasper which can be engaged, The 1st seal which covers the above-mentioned insertion opening periphery section airtightly in contact with the front panel of the above-mentioned disk tray when it is prepared in the above-mentioned front wall along with the periphery section of the above-mentioned insertion opening and the above-mentioned disk tray moves to the above-mentioned pushing location, When it is prepared in the above-mentioned clamp holder and the above-mentioned disk tray moves to the above-mentioned pushing location, the above-mentioned disk tray is contacted and it is characterized by having the 2nd seal which covers the clearance between the above-mentioned disk tray and a clamp holder.

[0010] If according to the optical disk driving gear of the above-mentioned configuration a disk tray pushes in and it moves to a location, the clearance between the front panel of a disk tray and a case front wall will be filled with the 1st seal, and the seal of the insertion opening perimeter will be carried out airtightly. The seal of the clearance between a disk tray and a clamp holder is filled and carried out to coincidence with the 2nd seal. The wind and swish which this generated from the optical disk which rotates between a disk tray and a clamp holder are covered with the 1st and 2nd seals, and a wind and a swish leak from the front-face side of a case to the exterior, and carry out thing prevention. Moreover, electric shielding of each above-mentioned clearance is performed using migration of a disk tray, without adding a special drive.

[0011] According to the optical disk unit concerning this invention, a clamp holder It has the front end side located in the above-mentioned insertion opening side. The above-mentioned disk tray It is prepared between the above-mentioned installation section and a front panel, and has the contact side which counters the front end side of the above-mentioned clamp holder. The 2nd seal of the above When it is prepared along the front end side of the above-mentioned clamp holder and the above-mentioned disk tray moves to the above-mentioned pushing location, it is characterized by contacting the contact side of the above-mentioned disk tray.

[0012] According to the optical disk driving gear concerning this invention, furthermore, the above-mentioned clamp holder It has the body with which the clasper was attached, and the rotation plate which was formed free [rotation of the above-mentioned body] and was located between the above-mentioned body and the above-mentioned insertion opening. The 2nd seal of the above When it is attached in the above-mentioned rotation plate and the above-mentioned disk tray moves to the above-mentioned pushing location, it is characterized by establishing the guide device in which rotate the above-mentioned rotation plate to the above-mentioned disk tray side, and the 2nd seal of the above is made to contact the above-mentioned disk tray.

[0013] The above-mentioned guide device is equipped with the cam side which was established in the above-mentioned disk tray and extended along the migration direction of a disk tray, the energization

member which energized the above-mentioned rotation plate to the above-mentioned disk tray side, and the guide section which contacted the above-mentioned cam side while being prepared in the above-mentioned rotation plate.

[0014]

[Embodiment of the Invention] The optical disk driving gear concerning the gestalt of implementation of this invention is explained to a detail, referring to a drawing below.

[0015] As shown in drawing 1 thru/or drawing 3, it has the rectangle-like case 10 mostly, fitting of the bezel 12 is carried out to front opening of a case, and the optical disk driving gear constitutes the front wall. The insertion opening 14 of the shape of a long and slender rectangle of ** which takes an optical disk in and out to the inside of a case 10 is formed in this bezel 12. The rectangle frame-like 1st seal 20 is stuck on the perimeter of the insertion opening 14 at the front-face side of a bezel 12.

[0016] Moreover, the optical disk driving gear is equipped with loading and the disk tray 16 for carrying out drawing for the optical disk to the inside of a case 10. The disk tray 16 has in one the almost rectangle tabular body 22 of a tray, and the rectangle tabular front panel 24 established in the front end of the body of a tray by intersecting perpendicularly with the body of a tray. The inside periphery section of a front panel 24 functions as the 1st contact side 24 which contacts the 1st seal 20 so that it may mention later.

[0017] In order to lay an optical disk 17, the disk installation section 18 which consists of a hollow is formed in the central part of the body 22 of a tray. The access opening 19 is formed in the disk installation section 18. Moreover, near the front panel, the step 26 was formed between the disk installation section 18 and a front panel 24, and it has extended over full [of the body 22 of a tray]. The end face by the side of the disk installation section 18 of a step 26 stands up perpendicularly to the top face of the body 22 of a tray, and constitutes 2nd contact side 26a.

[0018] The disk tray 16 of the above-mentioned configuration lets the insertion opening 14 pass, and is supported possible [drawing in] and possible [the cash drawer out of a case] into the case by the guide device which was established in the case 10 and which is not illustrated. And by pulling out the disk tray 16 from a case 10 to a predetermined cash-drawer location, the disk installation section 18 is exposed and the desorption of an optical disk 17 becomes possible to this disk installation section. Moreover, by pushing in the disk tray 16 to the predetermined pushing location in a case 10, it is loaded with an optical disk 17 into a case 10, and read-out of information to an optical disk and the writing of it are attained.

[0019] As shown in drawing 1 and drawing 4, in the case 10, the almost rectangle tabular clamp holder 30 is formed. This clamp holder 30 is arranged so that the disk installation section 18 of the disk tray 16 which moved to the pushing location, and a predetermined clearance may be placed and it may counter in parallel. The clasper 32 which engages with the feed hole of an optical disk 17 is formed in the inside center section of the clamp holder 30. Moreover, a clamp holder 30 is extended and formed in the insertion opening 14 side, and the front end side 31 has the configuration corresponding to 2nd contact side 26a of the disk tray 16. And it crosses to the whole region and the 2nd seal 34 is stuck on this front end side 31.

[0020] In addition, the 1st seal 20 and the 2nd seal 34 which were mentioned above function as a gasket, for example, are formed of rubber, urethane foam, etc.

[0021] The drive system 36 of an optical disk 17 is formed in the pars basilaris ossis occipitalis in a case 10. This drive system 36 is equipped with the turntable 38 which supports and drives [rotation] the optical disk 17 with which it was loaded, the optical head which performs informational read-out and informational writing to an optical disk and which is not illustrated.

[0022] In the optical disk driving gear of the above-mentioned configuration; loading or when carrying out drawing, as it is shown in drawing 1 and drawing 3, the disk tray 16 is pulled out for an optical disk 17 from a case 10 to a predetermined cash-drawer location, and the disk installation section 18 is exposed. In this condition, desorption of an optical disk 17 is performed to the disk installation section 18.

[0023] moreover, read-out of information, when [a certain] writing in that it can be, after loading the

disk installation section 18 with an optical disk 17 to an optical disk 17, the disk tray 16 is pushed in to the predetermined pushing location in a case 10. Then, as shown in drawing 4, the optical disk 17 laid in the disk installation section 18 counters with a clamp holder 30, and is located. Moreover, the front panel 24 of the disk tray 16 blockades the insertion opening 14 while it aligns with bezel 12 front face of a case 10 and is located. Under the present circumstances, the 2nd seal 20 prepared in the perimeter of the insertion opening 14 contacts 1st contact side 24a of a front panel 24, fills the clearance between a front panel and a bezel 12, and carries out the seal of the perimeter of the insertion opening 14 airtightly.

[0024] 2nd contact side 26a prepared in the disk tray 16 at coincidence contacts the 2nd seal 34 stuck in the front end side 31 of a clamp holder 30. Thereby, the seal of the clearance between the disk tray 16 and a clamp holder 30, especially the clearance by the side of the insertion opening 14 is filled and carried out with the 2nd seal 34.

[0025] Then, if the elevator style of a drive system 36 drives, a turntable 38 goes up through the access opening 19 of the disk tray 16, and while supporting an optical disk 17, it will push against a clasper 32. Thereby, an optical disk 17 is supported by the condition of having estranged from the disk tray 16, and the rotation drive of it is attained. And while driving a turntable 38 and rotating an optical disk 17 in this condition, the optical head which is not illustrated performs informational read-out or informational writing.

[0026] If according to the optical disk driving gear constituted as mentioned above the disk tray 16 pushes in and it moves to a location, the clearance between the front panel 24 of a disk tray and bezel 20 front face will be filled with the 1st seal 20, and the seal of the insertion opening 14 perimeter will be carried out airtightly. 2nd contact side 26a of the disk tray 16 contacts the 2nd seal 34 stuck on the front end side 31 of a clamp holder 30, and the seal of the clearance between the disk tray 16 and a clamp holder 30 is filled and carried out to coincidence with the 2nd seal. Therefore, the wind and swish which were generated from the optical disk 17 which rotates between the disk tray 16 and a clamp holder 30 are covered with the 1st and 2nd seals 20 and 34, a wind and a swish leak from the front-face side of a case 10 to the exterior, and the thing prevention of them can be carried out.

[0027] Moreover, since the increment in components mark can also be managed with one of the 2nd seal 34, without adding a special drive while being able to cover a clearance using migration of the disk tray 16, the insulation by the side of the front face of equipment can be improved, without raising a manufacturing cost.

[0028] Next, the optical disk driving gear concerning the gestalt of other operations of this invention is explained. As shown in drawing 5 thru/or drawing 7, according to the gestalt of other operations, a clamp holder 30 has rectangle tabular body 30a in which the clasper 32 was formed, and rectangle-like rotation plate 30b, and the rotation plate is supported free [rotation] by the pivot 40 prolonged in the migration direction of the disk tray 16, and the direction which intersects perpendicularly at the front end side of a body. And rotation plate 30b is energized by the torsion spring 42 of the pair wound around the pivot 40 in the lower part, i.e., the direction rotated to the disk tray 16 side.

[0029] The guide projection 44 of the pair caudad projected toward the disk tray 16 is formed in the both sides of the front end section of rotation plate 30b. Moreover, the 3rd long and slender tabular seal 46 was stuck on the front end section inside of rotation plate 30b, and it has extended over full [of a rotation plate]. In addition, the 3rd seal 46 functions as the 2nd seal in this invention.

[0030] On the other hand, the body 22 of a tray of the disk tray 16 has the cam side 50 formed in the top-face both-sides section, respectively. These cam sides 50 have extended to the front panel 24 along the migration direction of the disk tray 16. Each cam side 50 has ramp 50b prolonged in the slanting upper part, and part II part 50c prolonged along the migration direction of the disk tray 16 from the ramp from the termination for part I part 50a prolonged along the migration direction of the disk tray 16 from the front panel 24, and part I.

[0031] As shown in drawing 6, in the condition that the disk tray 16 was pulled out, the guide projection 44 of the pair prepared in rotation plate 30b of a clamp holder 30 is in contact with 2nd guide section 50c of the guide side 50 which corresponds, respectively. Thereby, rotation plate 30b is held at

the condition parallel to body 30a of a clamp holder 30.

[0032] If the disk tray 16 pulls out, it pushes in from a location and it is moved to a location as shown in drawing 7, each guide projection 44 of rotation plate 30b will move in the corresponding cam side 50 top, and will reach on part I part 50a through part II part 50c and ramp 50b. Then, rotation plate 30b rotates caudad toward the disk tray 16 according to the energization force of torsion spring 42, and the 3rd seal 46 prepared in rotation plate 30b is pushed against the top face of the body 22 of a tray. Thereby, the seal of the clearance between the disk tray 16 and a clamp holder 30, especially the clearance by the side of the insertion opening 14 is filled and carried out with the 3rd seal 46. In addition, other configurations are the same as that of the gestalt of operation mentioned above, give the same reference mark to the same section section, and omit the detailed explanation.

[0033] Also in the optical disk driving gear concerning the gestalt of other operations constituted as mentioned above, if the disk tray 16 pushes in and it moves to a location, while the clearance between the front panel 24 of a disk tray and bezel 20 front face will be filled with the 1st seal 20 and the seal of the insertion opening 14 perimeter will be carried out airtightly, the seal of the clearance between the disk tray 16 and a clamp holder 30 is filled and carried out with the 3rd seal 46. Therefore, the wind and swish which were generated from the optical disk 17 which rotates between the disk tray 16 and a clamp holder 30 are covered with the 1st and 3rd seals 20 and 46, a wind and a swish leak from the front-face side of a case 10 to the exterior, and the thing prevention of them can be carried out.

[0034] Moreover, a clearance can be covered using migration of the disk tray 16, without adding a special drive, and the insulation by the side of the front face of equipment can be improved, without raising a manufacturing cost.

[0035] In addition, this invention is variously deformable within the limits of this invention, without being limited to the gestalt of operation mentioned above. For example, in the gestalt of operation mentioned above, although the 2nd seal 34 was stuck on the front end side 31 of a clamp holder 30, you may stick on the 2nd contact side 26a side of the disk tray 16. It is good also as a configuration which similarly replaces the 3rd seal 46 with rotation plate 30b, and is prepared in the top-face side of the disk tray 16 in the gestalt of other operations.

[0036]

[Effect of the Invention] As explained in full detail above, while preparing the seal which fills the clearance between a disk tray and a clamp holder according to this invention, by considering as the configuration which puts this seal using migration of a disk tray, the blowdown of the wind to the exterior can be prevented and the optical disk driving gear which can prevent generating of a whizzing sound can be offered.

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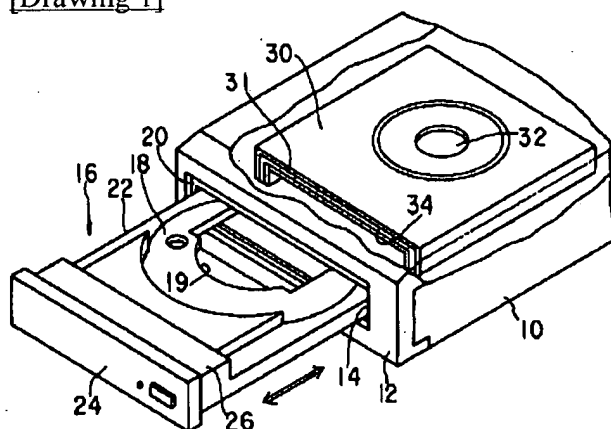
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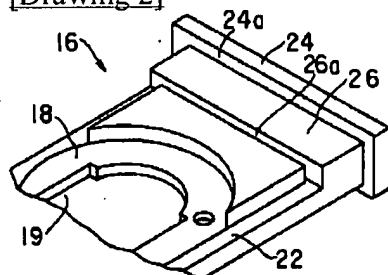
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DRAWINGS

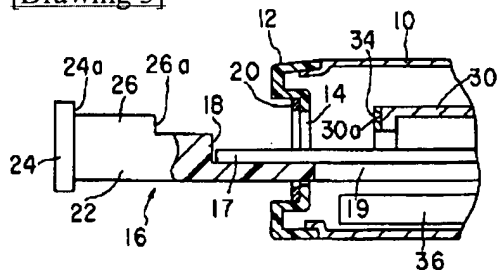
[Drawing 1]



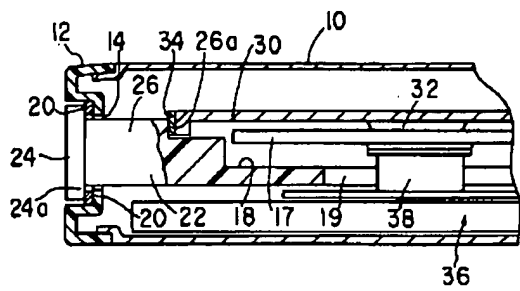
[Drawing 2]



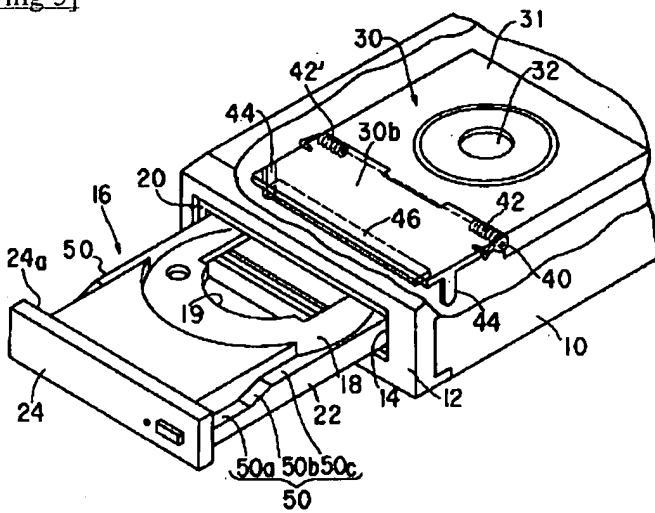
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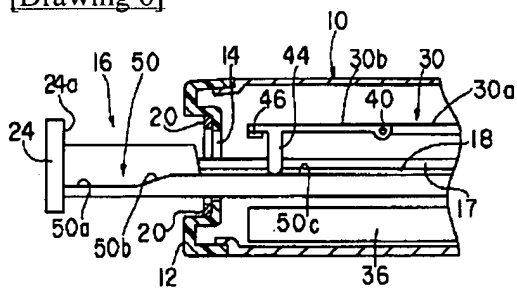
[Drawing 4]



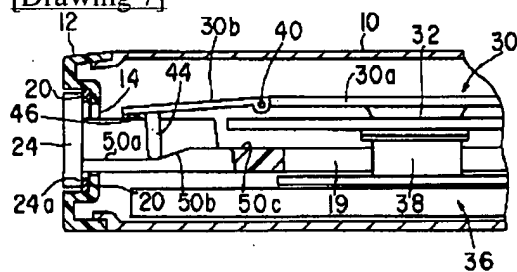
[Drawing 5]



[Drawing 6]



[Drawing 7]



[Translation done.]